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XX.

OBSERVATIONS OF VARIABLE STARS IN 1885.

BY EDWARD C. PICKERING.

Communicated February 10, 1886.

THE present publication is the third in a series of annual statements relating to variable stars, which was begun in 1884. The value of these statements mainly depends upon their completeness, and it is therefore to be hoped that all observers of variable stars will send accounts of their work to the Observatory of Harvard College as soon as possible after the close of each year. The principal facts desired are the designations of the stars observed, and the number of nights on which each of them was examined. But brief statements of the results obtained, such as the times of maxima and minima, are also desirable, when they can be readily furnished. Information with regard to the instruments employed and the method of observation will likewise be very serviceable.

The evident need of a new catalogue of variable stars has occasioned some preparations for such a list to be made, and the question of publishing it in the *Astronomische Nachrichten* has been discussed by correspondence with Dr. Krüger, the editor of that periodical. It is, however, desirable that the catalogue, when published, should have a definite and authoritative character, so that it appears best to avoid premature action with regard to it. Meanwhile, it has been decided to make no addition to the list of known variables published in the article entitled "Recent Observations of Variable Stars," although some stars not belonging to that list are now certainly known to be variable. In the present publication such stars are therefore still mentioned in connection with suspected variables. Several stars included in the original list are not there designated by the letters which have at times been applied to them, and it has been decided not to make any change in this respect for the present, in order to avoid the possibility of confusion. Observers are therefore requested to give the right ascensions and declinations of all stars mentioned in their statements, unless they can be designated by the numbers given in the first columns of Tables I. and II. in "Recent Observations of Variable Stars."

Photometric observations of all the stars with which variables are known to have been compared have been undertaken at the Observatory of Harvard College, to which all observers are requested to send lists of the comparison stars employed by them, or references to the published places of such stars. The lists of Argelander, Schönfeld, and Oudemans form the foundation of the work, but information of many comparison stars not included in those lists has been received, and these stars are also to be observed.

It is hoped that it will ultimately be practicable to give the number of observations of each variable star which have been made each year since its discovery. Any information of this kind, hitherto unpublished, will therefore be gratefully received.

It is much to be desired that observers stationed in the southern hemisphere should pay some attention to the variable stars which their situation gives them special facilities for observing, and should send some notice of their work for appearance in this series of publications. It will be seen on examination that no variables in large southern declinations are known to have been recently observed.

The present report relates principally to observations made during 1885; but earlier observations, notice of which has been received since the last report was published, are also mentioned in it. The observers whose work is here stated are named below in alphabetical order, with the abbreviations employed to designate them in the subsequent tabular statements.

B. These observations were made by Mr. T. W. Backhouse, of Sunderland, England, where most of the comparisons were made. A refracting telescope by Cooke, aperture $4\frac{1}{4}$ inches, magnifying powers 38 and 75, was often used; other observations were made with the finder, power 9, and the rest with a field-glass and similar instruments of low power, or with the naked eye. The methods of comparison were chiefly three: that of Argelander, that in which the relative brightness of the star observed is indicated by a fraction of the apparent difference between two comparison stars, and that of verbal description, in which, however, the words employed are regarded as having numerical values. A copy of the observations has been sent to the Observatory of Harvard College.

D. These observations were made by Dr. N. C. Dunér, at the Observatory of Lund, Sweden, according to the method of Argelander.

Ee. These observations were made by Mr. John H. Eadie, at Bayonne, New Jersey. The telescope employed was made by John Byrne; its aperture is $3\frac{1}{4}$ inches, and the lowest magnifying power

about 50. Argelander's method of comparison is used. A copy of the observations has been furnished to the Harvard College Observatory. Mr. Eadie acts in co-operation with Mr. Parkhurst in a manner which is explained in the remarks upon Mr. Parkhurst's observations. This system of co-operation appears to be highly efficient and economical. It deserves extension and general introduction among observers not too far separated for ready communication with each other.

En. These observations were made by the Rev. T. E. Espin, of Walsingham, Darlington, England. The instruments employed were a binocular glass and reflecting telescopes of 9 and $17\frac{1}{4}$ inches in aperture, the last by Calver.

G. These observations were made by Mr. J. E. Gore, of Ballysodare, Ireland, by Argelander's method. The instrument was a binocular field-glass having object-glasses of 2 inches in aperture, and a magnifying power of about six diameters.

Hg. These observations were made at Dorpat, by Dr. E. Hartwig.

Hn. These observations were made by the Rev. J. Hagen, S. J., at the College of the Sacred Heart, Prairie du Chien, Wisconsin. The instrument is a telescope by Merz; its aperture is 3 inches. The observations were made by the division into tenths of the interval between two comparison stars. A copy of the observations has been furnished to the Harvard College Observatory. Mr. Zaiser has taken part in the work as an assistant.

K. These observations were made by Mr. George Knott, at Knowles Lodge, Cuckfield, Hayward's Heath, England. The telescope employed was made by Alvan Clark and Sons; its aperture is $7\frac{1}{3}$ inches, and that of the finder 2 inches. The variable is compared with stars differing little from it in brightness; the magnitudes of the comparison stars, and sometimes the magnitude of the variable, are determined by the method of limiting apertures.

M. These observations, which relate exclusively to suspected variables, were made with the meridian photometer of the Harvard College Observatory. The observers using this instrument are E. C. Pickering and O. C. Wendell. The magnitudes of the stars observed with it are referred to a series of one hundred circumpolar stars, the brightness of which was determined by observations described in Volume XIV. of the Annals of the Observatory.

P. These observations were made by Mr. H. M. Parkhurst, at Brooklyn, N. Y. The instrument is a telescope made by Fitz; its aperture is 9 inches, and the magnifying powers employed are 56 and 150. Many of the observations are made by Argelander's method,

and others by photometric apparatus devised by Mr. Parkhurst, and partially described in the article entitled "Recent Observations of Variable Stars," which was mentioned above. A copy of the observations has been furnished to the Harvard College Observatory. The co-operation of Mr. Eadie with Mr. Parkhurst has already been mentioned. The former observer undertakes the observation of certain stars while they are sufficiently bright to be well seen in his telescope, and when they become too faint for further observations he notifies Mr. Parkhurst to begin observing them. When they are again sufficiently bright to be observed by Mr. Eadie, he is informed of the fact by Mr. Parkhurst. This system permits each observer to employ his time to the best advantage. It is hoped that some astronomer having a large telescope at command will undertake observations of the stars studied by Messrs. Parkhurst and Eadie at times when they are too faint to be followed by either observer.

Sk. Professor Safarik, of Prague, Austria, has furnished a statement of observations made by him in 1885, and also of those made in 1883 and 1884, which were incompletely noticed in the circular published in 1885. The observations were made by Argelander's method. The instrument used previous to March, 1885, was a Newtonian reflector $6\frac{1}{2}$ inches in aperture, with a mirror of silvered glass. The ordinary magnifying power was 32. The finder had an aperture of 3 inches, and a magnifying power of 12. Subsequent observations were made with a refractor by Schröder, with an aperture of 4.5 inches, a magnifying power of 23, and a field of $1^{\circ} 30'$. Between 1880, January 1, and 1884, December 31, Professor Safarik has made a little more than 5700 observations of about 100 stars. During the year 1885 he made 1647 observations of 89 stars. On all suitable occasions he estimates the colors of the stars observed upon Schmidt's scale. The number of observations made in the separate months of each year are given in the statements just described.

Sr. These observations were made, according to Argelander's method, by Mr. E. F. Sawyer, at Cambridgeport, Massachusetts, by means of an opera-glass for the brighter stars, and of a field-glass for the others.

Zr. The observations of Assistant Zaiser have already been mentioned under the heading Hn.

Table I. indicates the progress of observation for stars included in Table I. of previous reports. Other stars, whether known or suspected to be variable, are included in Table II. All the columns of Table I. except the last are repeated from the statement of the previous year.

The first column of the left-hand page gives a provisional number for designating the star. This number is taken from Schönfeld's Catalogue when the star occurs there; in other cases, a letter is added to the number. The second column contains numbers from the Photometric Catalogue called Harvard Photometry, and published in Volume XIV. of the Annals of the Harvard College Observatory. The following columns contain the usual designation of the star, its right ascension and declination for 1875, magnitude at maximum and minimum, and period in days.

The first column of the right-hand page repeats the number to be used for the provisional designation of the star. The second gives the class to which the star belongs, upon the system of classification employed in the Proceedings of the American Academy of Arts and Sciences, XVI. 257. Upon this system, Class I. includes temporary stars; Class II., stars undergoing large variations in periods of several months; Class III., irregularly variable stars, undergoing but slight changes in brightness; Class IV., variable stars of short period, like β *Lyræ* or δ *Cephei*; Class V., Algol stars, or those which at regular intervals undergo sudden diminutions of light, lasting for a few hours only. The third column gives the name of the discoverer, and the fourth column the date.

The last column contains the number of nights on which each star was observed by the astronomer whose designation is attached to the number. The abbreviations employed have been explained above. The designation Sk. is preceded by three numbers, which relate respectively to observations made in 1883, 1884, and 1885. A dash replaces a number when some observations are known to have been made, but their number has not been ascertained.

Table I. is followed by a series of remarks containing observed dates of maximum and minimum, and other information derived from the observers with regard to particular stars.

Table II. indicates the progress of observation of stars suspected or known to be variable, but not included in Table I. for reasons previously explained. The stars are designated in the first column by Mr. Chandler's provisional numbers, as in the previous statement. The number is replaced by a dash when the star has not yet been entered in Mr. Chandler's catalogue. The second and third columns give the right ascensions and declinations of the stars for 1875. The fourth column gives the number of observations made by each observer, as in the last column of Table I. The abbreviations are likewise the same. The letters in the last column refer to the remarks on page 334.

TABLE I. — VARIABLE STARS.

No.	H.P.	Name.	R. A. 1875.	Dec. 1875.	Max.	Min.	Per.
			h. m. s.	° ' "	m.	m.	d.
0a	—	Ceti	0 15 26	—20 45.1	5.2	7.0	—
1	51	T Cassiopeiæ	16 29	+55 5.9	6.5—7.0	11—11.2	436
2	54	R Andromedæ	17 28	+37 53.0	5.6—8.6	<12.8	404.7
3	—	S Ceti	17 42	—10 1.3	7.0—8.0	<10.7	323.6
4	—	B Cassiopeiæ	17 52	+63 27.2	>1	?	—
5	—	T Piscium	25 31	+13 54.6	9.5—10.2	10.5—11.0	Irr.
6	94	α Cassiopeiæ	33 25	+55 51.1	2.2	2.8	Irr.
6a	—	U Cephei	51 18	+81 12.1	7.0	9.5	2.5
7	—	S Cassiopeiæ	1 10 30	+71 57.2	6.7—8.5	<13	615
8	—	S Piscium	11 2	+ 8 16.3	8.8—9.3	<13	406.6
8a	—	Piscium	16 22	+12 12.7	10	14	—
8b	—	Ceti	19 31	— 4 36.6	6.5	7.8	—
8c	—	R Sculptoris	21 13	—33 11.5	5½	7½	207
9	—	R Piscium	24 12	+ 2 14.1	7.4—8.3	<12.5	345
10	—	S Arietis	57 55	+11 55.5	9.1—9.8	<13	288.8
11	—	R Arietis	2 9 1	+24 28.4	7.6—8.5	11.9—12.7	186.2
12	370	o Ceti	13 1	— 3 32.7	1.7—5.0	8—9	331.3
13	—	S Persei	13 54	+58 0.8	8.5?	<9.7	—
14	—	R Ceti	19 39	— 0 44.6	7.9—8.7	<12.8	167.1
15	—	T Arietis	41 22	+16 59.3	7.9—8.2	9.4—9.7	324
16	489	ρ Persei	57 10	+38 21.3	3.4	4.2	Irr.
17	496	β Persei	3 0 2	+40 28.4	2.2	3.7	2.9
18	—	R Persei	22 6	+35 14.3	8.1—9.2	12.5	208.8
19	657	λ Tauri	53 45	+12 8.2	3.4	4.2	4.0
20	—	T Tauri	4 14 43	+19 14.3	9.2—11.5	12.8—<	Irr.
21	—	R Tauri	21 27	+ 9 52.9	7.4—9.0	<13	325.6
22	—	S Tauri	22 22	+ 9 40.1	9.9	<13	378
22a	—	Doradus	35 19	—62 19.4	5½	6½	—
23	—	V Tauri	44 48	+17 19.6	8.3—9.0	<12.8	168.6
24	—	R Orionis	52 13	+ 7 56.3	8.7—8.9	<13	378.8
25	877	ε Aurigæ	53 0	+43 38.2	3.0	4.5	Irr.
26	880	R Leporis	53 55	—14 59.7	6—7	8.5?	437.8
27	—	R Aurigæ	5 7 12	+53 26.6	6.5—7.4	12.5—12.7	465
27a	—	S Aurigæ	18 52	+34 2.3	9.4	<13	—
28	—	S Orionis	22 50	— 4 47.5	8.3?	<12.3	—
29	1005	δ Orionis	25 37	— 0 23.6	2.2?	2.7	Irr.
29a	—	Orionis	29 42	— 5 33.5	10	13	—
30	1091	α Orionis	48 24	+ 7 23.3	1	1.4	Irr.
31	1160	η Geminorum	6 7 20	+22 22.4	3.2	3.7—4.2	229.1
31a	—	Monocerotis	16 26	— 2 8.1	7	<10	—
32	1205	T Monocerotis	18 29	+ 7 9.1	6.2	7.6	26.8
33	—	R Monocerotis	32 21	+ 8 50.7	9.5	11.5	Irr.
34	1256	S Monocerotis	34 6	+10 0.5	4.9	5.4	3.4
35	—	R Lyncis	50 59	+55 30.2	9?	<12.3	—
36	1334	ζ Geminorum	56 41	+20 45.1	3.7	4.5	10.2
37	—	R Geminorum	59 49	+22 53.8	6.6—7.3	<12.3	371.0
38	—	R Canis min.	7 1 50	+10 13.1	7.2—7.9	9.5—10.0	335.0
38a	—	Puppis	9 43	—44 26.2	3½	<6	135
38b	—	V Geminorum	16 10	+13 21.8	8½	12—13½	276
38c	1417	U Monocerotis	24 50	— 9 31.0	6.0	7.2	46.0
39	—	S Canis min.	25 56	+ 8 35.0	7.2—8.0	<11	332.2
40	—	T Canis min.	27 3	+12 0.6	9.1—9.7	<13	335.2
40a	—	Canis min.	34 34	+ 8 40.2	8½	13.5	405

TABLE I.—VARIABLE STARS.

No.	Class.	Discoverer.	Date.	Observations, 1885.
0a	—	Chandler	1881	1 G. 30 Sr.
1	II.	Krüger	1870	6 Ee. 1 En. 3 G. 24,42,27 Sk.
2	II.	Argelander	1858	3 D. 2 Ee. 5 P. 15,19,8 Sk. 27 Sr.
3	II.	Borelly	1872	3 Ee. 7 P. 9,0,0 Sk.
4	I.	Tycho Brahe	1572	—
5	II.	Luther	1855	4 Ee. 1 P.
6	III.	Birt	1831	2 B. 32 Sr.
6a	V.	Ceraski	1880	21 Hn. 3 K.
7	II.	Argelander	1861	8 P. 67,39,23 Sk.
8	II.	Hind	1851	10 Ee. 4 P. 1,0,0 Sk.
8a	—	Peters	1880	11 P.
8b	—	Gould	1874?	1 Hn. 11 Sr.
8c	II.	Gould	1872?	—
9	II.	Hind	1850	12 P. 11,2,0 Sk.
10	II.	Peters	1865	10 P.
11	II.	Argelander	1857	6 Hn. 10 P. 7,6,0 Sk.
12	II.	Fabricius	1596	35 B. 37 G. — Hg. 15 K. 18,23,17 Sk. 54 Sr.
13	II.	Krüger	1873	— Hg. 21 Hn. 43,39,53 Sk.
14	II.	Argelander	1866	11 P. 9,6,8 Sk.
15	II.	Auwers	1870	12 Hn. 37,30,16 Sk
16	II.?	Schmidt	1854	36 Sr.
17	V.	Montanari	1669	10 B. 3 Hg. 1 Sr.
18	II.	Schönfeld	1861	6 Ee. 12 H. 6 P. 8,14,9 Sk.
19	V.	Baxendell	1848	9 Zr.
20	—	Hind	1861	3 K. 8 P. 5,5,3 Sk.
21	II.	Hind	1849	6 Ee. 9 P. 19,9,5 Sk.
22	II.	Oudemans	1855	6 Ee. 9 P. 19,9,6 Sk.
22a	—	Gould	1874?	—
23	II.	Auwers	1871	12 P. 15,8,7 Sk.
24	II.	Hind	1848	2 Ee. 4,1,0 Sk.
25	III.	Fritsch	1821	34 Sr.
26	II.	Schmidt	1855	17,11,10 Sk. 21 Sr.
27	II.	At Bonn	1862	12 Hn. 3 P. 11,19,0 Sk.
27a	II.	Dunér	1881	21 D. 5 P.
28	II.	Webb	1870	13 Ee. 1 K. 10 P. 25,19,23 Sk.
29	III.	J. Herschel	1834	14 Sr.
29a	—	Bond	1863	11 Ee. 10 P.
30	III.	J. Herschel	1836	9 Zr.
31	II.?	Schmidt	1866	2 B. 20 Sr.
31a	—	Schönfeld	1883	13 Sr.
32	IV.	Gould	1871	71 Sr.
33	II.	Schmidt	1861	—
34	IV.	Winnecke	1867	29 Sr.
35	II.	Krüger	1874	11 P. 5,21,15 Sk.
36	IV.	Schmidt	1844	22 Sr. 10 Zr.
37	II.	Hind	1848	6 K. 11 P. 0,0,7 Sk.
38	II.	At Bonn	1854	8 Hn. 0,14,23 Sk.
38a	II.	Gould	1872	—
38b	II.	Baxendell	1880	1 Ee. 6 K.
38c	II.?	Gould	1873	20 En. 64 Sr.
39	II.	Hind	1856	2 Ee. 7 K. 0,14,25 Sk.
40	II.	Schönfeld	1865	1 Ee.
40a	II.	Baxendell	1879	2 Ee. 2 K.

TABLE I. — *Continued.*

No.	H.P.	Name.	R. A. 1875.	Dec. 1875.	Max.	Min.	Per.
			h. m. s.	° ' "	m.	m.	d.
41	—	S Geminorum	7 35 32	+23 44.6	8.2 — 8.7	<13	294.2
42	—	T Geminorum	41 48	+24 2.7	8.1 — 8.7	<13	288.1
42a	—	S Puppis	43 6	—47 8.3	7½	9	—
43	—	U Geminorum	47 41	+22 19.7	8.9 — 9.7	13.1	Irr.
43a	—	Puppis	55 0	—12 32	8½	<14	310
44	—	R Cancri	8 9 40	+12 6.5	6.2 — 8.3	<11.7	354.4
45	—	V Cancri	14 36	+17 40.9	6.8 — 7.2	<12	272
46	—	U Cancri	28 37	+19 19.5	8.2 — 10.4	<13	305.7
47	—	S Cancri	36 48	+19 29.0	8.2	9.8	9.5
48	—	S Hydræ	47 8	+ 3 32.4	7.5 — 8.5	<12.2	256.4
49	—	T Cancri	49 32	+20 19.7	8.2 — 8.5	9.8 — 10.5	484.2
50	—	Th Hydræ	49 35	— 8 39.8	7.0 — 8.1	<12.5	289.4
50a	—	R Carinæ	9 29 6	—62 14.2	4.4	9.3	313
51	—	R Leonis min.	38 4	+35 5.2	6.1 — 7.5	<11.0	374.7
52	1752	R Leonis	40 50	+12 0.5	5.2 — 6.4	9.4 — 10.0	312.6
52a	—	l Carinæ	41 49	—61 55.9	3.7	5.2	31.2
52b	—	Leonis	53 3	+21 51.6	8½	8.6 <13	280?
52c	—	Antliæ	10 4 22	—37 7.1	6½	<8	—
52d	—	Carinæ	5 23	—60 56.3	6½	9	—
52e	—	U Leonis	17 21	+14 38.1	9½	Inv.	—
52f	1869	Hydræ	31 22	—12 44.1	4½	6	—
53	1880	R Ursæ maj.	35 47	+69 25.9	6.0 — 8.1	12	303.4
54	—	η Argus	40 13	—59 1.6	>1	6.3	Irr.
54a	—	T Carinæ	50 18	—59 51.2	6.2	6.9	—
55	—	R Crateris	54 25	—17 39.2	>8	<9	—
56	—	S Leonis	11 4 23	+ 6 8.5	9.0 — 9.7	<13	187.6
57	—	T Leonis	32 2	+ 4 3.9	10?	<13	—
58	—	X Virginis	55 27	+ 9 46.1	7.8?	<10	—
59	—	R Comæ	57 51	+19 23.8	7.4 — 8.0	<13	363
60	—	T Virginis	12 8 12	— 5 20.4	8.0 — 8.8	<13	337
61	—	R Corvi	13 10	—18 33.5	6.8 — 7.3	<11.5	318.6
61a	—	— Virginis	27 26	— 3 43.8	8	14	210±
62	—	T Ursæ maj.	30 42	+60 10.6	7.0 — 8.3	12.2	255.6
63	2147	R Virginis	32 10	+ 7 40.6	6.5 — 7.5	10.0 — 10.9	145.7
63a	—	R Muscæ	34 28	—68 43.3	6.6	7.3	0.9
64	—	S Ursæ maj.	38 28	+61 46.7	7.7 — 8.2	10.2 — 11.1	224.8
65	—	U Virginis	44 46	+ 6 14.0	7.7 — 8.1	12.2 — 12.8	207.4
66	—	W Virginis	13 19 35	— 2 43.4	8.7 — 9.2	9.8 — 10.4	17.3
67	—	V Virginis	21 21	— 2 31.4	8.0 — 9.0	<13	251
68	2275	R Hydræ	22 53	—22 38.0	4.0 — 5.5	10?	469.3
69	2289	S Virginis	26 29	— 6 33.0	5.7 — 7.8	12.5	374.0
69a	—	Virginis	14 3 37	—12 42.7	9	14	—
69b	—	R Centauri	7 35	—59 19.8	6	10	—
70	—	T Bootis	8 14	+19 39.1	9.7?	<13	—
71	—	S Bootis	18 41	+54 22.7	8.1 — 8.5	13.2	272.4
72	—	R Camelopardi	27 8	+84 23.8	7.9 — 8.6	12?	266.2
73	2445	R Bootis	31 41	+27 16.9	5.9 — 7.5	11.3 — 12.2	223.0
73a	2459	Bootis	37 56	+27 3.6	5.2	6.1	370?
73b	—	Bootis	48 33	+18 12.1	9.1	12.0 — 13.6	173.8
74	2506	δ Libræ	54 18	— 8 1.2	4.9	6.1	2.3
74a	—	Libræ	15 3 37	—19 33.9	10	<13.5	700±
74b	—	R Triang. Austr.	8 37	—66 2.1	6.6	8.0	3.4
75	—	U Coronæ	13 6	+32 6.4	7.6	8.8	3.5
76	—	S Libræ	14 13	—19 56.1	8.0	12.5?	—
77	—	S Serpentis	15 48	+14 45.9	7.6 — 8.6	12.5?	361.0

TABLE I.—*Continued.*

No.	Class.	Discoverer.	Date.	Observations, 1885.
41	II.	Hind	1848	—, —, 29 Sk.
42	II.	Hind	1848	—, —, 31 Sk.
42a	—	Gould	1874?	—
43	II.?	Hind	1855	2 Hg. 45 K. 49,54,54 Sk.
43a	II.	Pickering	1881	—
44	II.	Schmidt	1829	1 Ee.
45	II.	Auwers	1870	7 P. 8,6,0 Sk.
46	II.	Chacornac	1853	1 Ee. 3 Hn. 6 K. 16,17,8 Sk.
47	V.	Hind	1848	1 Ee. 32 Hn. 2 K.
48	II.	Hind	1848	5,1,22 Sk. 22 Sr.
49	II.	Hind	1850	1 En. 4 P. 6,5,12 Sk.
50	II.	Hind	1851	4,12,3 Sk.
50a	II.	Gould	1871	—
51	II.	Schönfeld	1863	2 P. 24 Sr.
52	II.	Koch	1782	72,34,31 Sk. 38 Sr.
52a	—	Gould	1871	—
52b	II.	Becker	1882	—
52c	—	Gould	1872	—
52d	—	Gould	1871	—
52e	—	Peters	1876	—
52f	—	Gould	1871	13 Sr. 2 Zr.
53	II.	Pogson	1853	3 Hn. 17 K. 2,0,10 Sk. 32 Sr.
54	II.?	Burchell	1827	—
54a	—	Thome	1872	—
55	II.	Winnecke	1861	4 Hn. 50,32,26 Sk.
56	II.	Chacornac	1856	—
57	II.	Peters	1865	—
58	II.	Peters	1871	4 Ee.
59	II.	Schönfeld	1856	4 K. 9 P.
60	II.	Boguslawski	1849	3,18,5 Sk.
61	II.	Karlinski	1867	25,14,3 Sk.
61a	II.	Henry	—	—
62	II.	Hencke	1856	12,10,19 Sk. 34 Sr.
63	II.	Harding	1809	2,0,0 Sk. 31 Sr.
63a	IV.	Gould	1871	—
64	II.	Pogson	1853	17 K. 11,14,39 Sk. 32 Sr.
65	II.	Harding	1831	12,0,15 Sk. 5 Sr.
66	II.?	Schönfeld	1866	—
67	II.	Goldschmidt	1857	13 P. 4,0,0 Sk.
68	II.	Maraldi	1704	30,0,4 Sk.
69	II.	Hind	1852	7 K.
69a	II.	Palisa	1880	10 P.
69b	—	Gould	1871	—
70	I.?	Baxendell	1860	—
71	II.	At Bonn	1860	14 Ee. 14 Hn. 6,14,0 Sk.
72	II.	Hencke	1858	10 Ee. 10 P. 51,40,40 Sk.
73	II.	At Bonn	1858	2 G. 0,18,39 Sk. 29 Sr.
73a	—	Schmidt	1867	6 Zr.
73b	II.	Baxendell	1880	16 Ee.
74	V.	Schmidt	1859	5 Zr.
74a	II.	Palisa	1878	—
74b	IV.?	Gould	1871	—
75	V.	Winnecke	1869	11 Hn.
76	II.	Borelly	1872	10 P. 19,12,8 Sk.
77	II.	Harding	1828	12 Ee. 9 Hn. 20 P.

TABLE I. — *Continued.*

No.	H. P.	Name.	R. A. 1875.	Dec. 1875.	Max.	Min.	Per.
			<i>h. m. s.</i>	<i>o. /</i>	<i>m.</i>	<i>m.</i>	<i>d.</i>
78	2553	S Coronæ	15 16 18	+31 49.1	6.1 — 7.8	11.9 — 12.5	361.0
78a	—	Libræ	34 46	—20 46.5	9	<14	—
79	2639	R Coronæ	43 25	+28 32.5	5.8	13.0	Irr.
80	2647	R Serpentis	44 56	+15 30.8	5.6 — 7.6	<11	357.6
80a	—	V Coronæ	45 4	+39 57.0	7.7	12	360.0
81	—	R Libræ	46 32	—15 51.7	9.2 — 10.0	<13	723
82	2678	T Coronæ	54 16	+26 16.5	2.0	9.5	—
83	—	R Herculis	16 0 37	+18 42.5	8.0 — 9.0	<13	319.0
83a	—	W Scorpïi	4 28	—19 48.6	10	<13	224.3
84	—	T Scorpïi	9 36	—22 39.9	7	<10	—
85	—	R Scorpïi	10 12	—22 38.2	9? — 10.5	<12.5	223
86	—	S Scorpïi	10 13	—22 35.2	9.1 — 10.5	<12.5	176.9
86a	—	Ophiuchi	14 40	— 7 24.0	9.0	<13.5	326
87	—	U Scorpïi	15 16	—17 35.3	9?	<12	—
87a	—	Ophiuchi	19 46	—12 8.5	7.5	10.5	365
88	—	U Herculis	20 16	+19 10.8	6.6 — 7.7	11.4 — 11.6	408.3
89	2772	g Herculis	24 32	+42 9.6	5	6.2	Irr.
90	—	T Ophiuchi	26 35	—15 51.8	10	<12.5	—
91	—	S Ophiuchi	27 4	—16 53.7	8.3 — 9.0	<12.5	233.8
91a	—	W Herculis	30 48	+37 35.6	8.0	<14.5	239
91b	—	Urs. Min.	31 40	+72 31.9	8.6	10.5	180?
91c	—	R Draconis	32 22	+67 0.7	7.2	13<	245.9
92	2828	S Herculis	46 13	+15 9.2	5.9 — 6.8	11.5 — 12.2	303
93	2839	Ophiuchi	52 30	—12 42.0	5.5	12.5	—
93a	—	V Herculis	53 41	+35 15.5	9.0	11.7	—
94	—	R Ophiuchi	17 0 36	—15 55.5	7.6 — 8.1	<12	302.4
95	2879	a Herculis	8 57	+14 32.1	3.1	3.9	Irr.
95a	2383	U Ophiuchi	10 12	+ 1 21.0	6.1	6.8	0.9
96	2890	u Herculis	12 42	+33 14.1	4.6	5.4	38.5
97	—	Serpentarii	23 9	—21 22.4	>1	?	—
98	2972	X Sagittarii	39 41	—27 46.8	4	6	7.0
99	3035	W Sagittarii	57 2	—29 35.1	5	6.5	7.6
100	—	T Herculis	18 4 22	+31 0.1	7.2 — 8.3	11.4 — 12.1	165.1
101	—	T Serpentis	22 43	+ 6 13.1	9.1 — 10.0	<12.8	342.3
102	—	V Sagittarii	24 4	—18 20.9	7.5?	9.5?	—
103	—	U Sagittarii	24 32	—19 12.7	7.0	8.3	6.7
104	—	T Aquilæ	39 45	+ 8 36.9	8.8	9.5	Irr.
105	3176	R Scuti	40 49	— 5 50.2	4.7 — 5.7	6.0 — 8.5	71.1
105a	—	κ Pavonis	44 3	—67 23.2	4.0	5.5	9.1
106	3193	β Lyræ	45 28	+33 13.0	3.4	4.5	12.9
107	3224	R Lyræ	51 32	+43 47.1	4.3	4.6	46.0
108	—	S Coron. Austr.	52 43	—37 7.2	9.8	11.5?	6.1
109	—	R Coron. Austr.	53 29	—37 7.2	10.5 — 11.5	<12.5	31
110	—	R Aquilæ	19 0 21	+ 8 2.6	6.4 — 7.4	10.9 — 11.2	345.1
111	—	T Sagittarii	9 1	—17 11.2	7.6 — 8.1	<11	381
112	—	R Sagittarii	9 21	—19 31.5	7.0 — 7.2	<12	270.0
113	—	S Sagittarii	12 7	—19 15.1	9.7 — 10.4	<12.7	230
114	3395	R Cygni	33 28	+49 55.1	5.9 — 8.0	13	425.3
115	—	11 Vulpeculæ	42 26	+27 0.5	3	?	—
116	—	S Vulpeculæ	43 16	+26 58.7	8.4 — 8.9	9.0 — 9.5	67.5
117	3434	χ Cygni	45 46	+32 36.0	4.0 — 6.0	12.8	406.5
118	3436	η Aquilæ	46 6	+ 0 41.2	3.5	4.7	7.2
119	—	S Cygni	20 2 53	+57 37.6	8.8 — 9.5	<13	322.8
120	—	R Capricorni	4 17	—14 38.2	8.8 — 9.7	<13	347
121	—	S Aquilæ	5 52	+15 14.9	8.9 — 9.9	10.7 — 11.8	147.2

TABLE I. — *Continued.*

No.	Class.	Discoverer.	Date.	Observations, 1885.
78	II.	Hencke	1860	10 Hn. 6 K. 15,50,39 Sk. 35 Sr.
78a	—	Peters	1878	9 P.
79	II.?	Pigott	1795	3 Ee. 5 G. 61,39,26 Sk. 70 Sr.
80	II.	Harding	1826	7 Ee. 1 K. 17 P. 6 Sr.
80a	II.	Dunér	1878	19 D. 3 Ee. 1 En. 27,16,16 Sk.
81	II.	Pogson	1858	—
82	I.	Birmingham	1866	17 B. 13 Hn. 2 K. 3,9,16 Sk.
83	II.	At Bonn	1855	24 Ee. 8 Hn.
83a	II.	J. Palisa	1877	11 P.
84	I.	Auwers	1860	—
85	II.	Chacornac	1853	5 K. 9 P.
86	II.	Chacornac	1854	5 K. 9 P.
86a	II.	Schönfeld	1881	—
87	I.?	Pogson	1863	—
87a	—	Dunér	1881	6 D.
88	II.	Hencke	1860	18,32,22 Sk. 30 Sr.
89	III.	Baxendell	1857	65 Sr.
90	II.	Pogson	1860	—
91	II.	Pogson	1854	1 Hn.
91a	—	Dunér	1880	13 D. 16 Ee. 7 Hn. 10 P.
91b	II.	Pickering	1881	20,17,70 Sk.
91c	II.	Geelmuyden	1876	39 Sr. 9,13,25 Sk.
92	II.	At Bonn	1856	8 Hn. 35,30,39 Sk.
93	I.	Hind	1848	—
93a	II.	Baxendell	1880	12 Ee.
94	II.	Pogson	1853	—
95	III.	W. Herschel	1795	2 Sr. 18 Zr.
95a	V.	Sawyer	1881	4 Sr.
96	III.	Schmidt	1869?	2 G. 12 Sr. 16 Zr.
97	I.	Fabricius	1604	—
98	IV.	Schmidt	1866	26 Sr.
99	IV.	Schmidt	1866	31 Sr.
100	II.	At Bonn	1857	10 Hn. 7,22,14 Sk. 16 Sr.
101	II.	Baxendell	1860	3 Ee.
102	II.	Quirling	1865	—
103	IV.	Schmidt	1866	—
104	II.	Winnecke	1860	—
105	II.	Pigott	1795	3,0,0 Sk. 65 Sr.
105a	IV.	Thome	1872	—
106	IV.	Goodricke	1784	1 Hg. 19 Zr.
107	II.?	Baxendell	1856	67 Sr.
108	IV.?	Schmidt	1866	—
109	II.?	Schmidt	1866	—
110	II.	At Bonn	1856	7 Ee. 13,3,32 Sk.
111	II.	Pogson	1863	35,17,14 Sk.
112	II.	Pogson	1858	6 P. 24,10,10 Sk.
113	II.	Pogson	1860	7 P. —, —, 12 Sk.
114	II.	Pogson	1852	9 Hn. 17 P. 10,8,1 Sk.
115	I.	Anthelm	1670	3 K.
116	II.	Hind	1861	31 Hn. 2 K. 7,0,0 Sk.
117	II.	Kirch	1686	2 En. 22 G. — Hg. 36 P. 29,27,9 Sk. 28 Sr.
118	IV.	Pigott	1784	—
119	II.	At Bonn	1860	9 K. 18 P. 0,2,12 Sk.
120	II.	Hind	1848	—
121	II.	Baxendell	1863	3 Ee. 16 K. 30 P.

TABLE I.—*Continued.*

No.	H. P.	Name.	R. A. 1875.	Dec. 1875.	Max.	Min.	Per.
			h. m. s.	° ' "	m.	m.	d.
122	—	R Sagittæ	20 8 22	+16 21.0	8.5—8.7	9.8—10.4	70.4
123	—	R Delphini	8 53	+ 8 42.7	7.6—8.5	12.8	284.0
124	3547	P Cygni	13 11	+37 38.7	3—5	<6	—
125	—	U Cygni	15 44	+47 30.1	7.8?	9.8?	—
126	3557	R Cephei	19 42	+88 45.2	5?	10?	—
126a	—	— Cygni	37 17	+47 41.8	8	12	423.
127	—	S Delphini	37 19	+16 38.4	8.4—8.6	10.4—11.1	275.6
128	—	T Delphini	39 34	+15 56.7	8.2—8.9	<13	331.4
129	—	U Capricorni	41 11	—15 14.4	10.2—10.8	<13	203.5
130	3654	T Cygni	42 12	+33 55.0	5.5?	6?	—
131	—	T Aquarii	43 20	— 5 36.5	6.7—7.0	12.4—12.7	203.2
132	—	R Vulpeculæ	53 49	+23 19.5	7.5—8.5	12.5—13.0	137.5
132a	—	Capricorni	21 0 19	—24 25.5	9½	14	—
132b	—	T Cephei	7 52	+67 58.9	5.6	9.5	382
133	—	T Capricorni	15 6	—15 41.4	8.9—9.7	<13	269.4
134	—	S Cephei	36 45	+78 3.6	7.4—8.5	11.5	485
134a	—	Nova Cygni	37 2	+42 18.2			—
135	3845	μ Cephei	39 41	+58 12.4	4?	5?	Irr.
136	—	T Pegasi	22 2 48	+11 55.7	8.8—9.3	<12.5	367.5
137	3981	δ Cephei	24 32	+57 46.6	3.7	4.9	5.4
137a	—	Lacertæ	37 43	+41 43.0	8.6	<13.5	315.
138	—	S Aquarii	50 25	—21 0.6	7.7—9.1	<11.5	279.4
139	4078	β Pegasi	57 45	+27 24.2	2.2	2.7	Irr.
140	—	R Pegasi	23 0 22	+ 9 52.1	6.9—7.7	12?	382.0
141	—	S Pegasi	14 14	+ 8 14.2	7.6	<12.2	—
142	4193	R Aquarii	37 21	—15 58.7	5.8—8.5	11?	388.0
143	4234	R Cassiopeiæ	52 4	+50 41.5	4.8—6.8	<12	425.9

REMARKS.

2. Max. 1885, beginning of February. D.
6a. Min. 1885, March 14, 9h. 32m. G. M. T.; March 19, 9h. 12m. G. M. T. K.
12. Max. 1885, February 4. G. Max. 1885, February 11; magn. 2.9. K.
27a. Max. 1885, February 12. D.
37. Rising to max. 1885, May 11; magn. 7.3. K.
38b. Rising to max. 1885, April 17; magn. 10.1. K.
38c. Max. 1885, January 25±. Min. 1885, January 6.5, February 17. En.
43. Max. 1885, April 8.8; magn. 9.25 (a double max.?); 1885, December 6±?? K.
46. Max. 1884, December 30; magn. 10.6. K.
47. Minima partially observed, 1885, February 20, March 11. Star disappeared in mist near horizon. K.
53. Max. 1885, June 28; magn. 7.1. Min. 1885, March 10; magn. 13.2. K.
59. Invisible on each occasion. K.
64. Max. 1885, May 5; magn. 7.25. K.
69. Declining. K.

TABLE I. — *Continued.*

No.	Class.	Discoverer.	Date.	Observations, 1885.
122	II.?	Baxendell	1859	25 Ee. 38 Hn. 1 P.
123	II.	Hencke	1859	7 Hn. 18,22,6 Sk.
124	I.	Janson	1600	0,1,16 Sk. 44 Sr. 13 Zr.
125	II.	Knott	1871	8 Ee. 7 En. 12 K. 11 P. 32,43,44 Sk.
126	II.?	Pogson	1856	18 Ee. 7 K. 20,10,12 Sk.
126a	II.	Birmingham	1881	3 En. — Hg. 11 P. 60,50,35 Sk.
127	II.	Baxendell	1860	21 Ee. 4 P. —, —, 21 Sk.
128	II.	Baxendell	1863	14 Ee. 14 K. 19,19,11 Sk.
129	II.	Pogson	1858	9 P.
130	—	Schmidt	1864	48 Sr.
131	II.	Goldschmidt	1861	11 P.
132	II.	At Bonn	1858	7 Ee. 10 K. 2 P. 8,0,0 Sk.
132a	—	Peters	1867	9 P.
132b	II.?	Ceraski	1878	25 Ee. 32 K. 25,30,45 Sk.
133	II.	Hind	1854	5 P.
134	II.	Hencke	1858	31 Ee. 56,60,54 Sk.
134a	I.	Schmidt	1876	—
135	III.?	Hind	1848	1 B. 35 G. 49,25,34 Sk. 22 Zr.
136	II.	Hind	1863	10 P. 0,2,0 Sk.
137	IV.	Goodricke	1784	22 Zr.
137a	—	Deichmüller	1883	4 Ee. — Hg. 11 K. 2 P.
138	II.	Argelander	1853	8 P. 13,1,2 Sk.
139	III.	Schmidt	1847	3 B. 39 Sr.
140	II.	Hind	1848	4 Ee. 4 P.
141	II.	Marth	1864?	0,1,0 Sk.
142	II.	Harding	1811	8 P. 19,8,8 Sk. 18 Sr.
143	II.	Pogson	1853	5 D. 5 Ee. 6 G. 19 P. 41,24,23 Sk.

78. Max. 1885, May 5 $\pm$?; magn. 7.6. K.

79. Estimated magn. 5.8 to 6.0. G.

80. 1885, April 20; magn. 11.5. K.

80a. Max. 1885, August. Computed max. 1878, October 21.7, +356^a.52. E.
Computed min. 1879, May 3, +356^a.52 E. D.

85. Past max. 1885, May 11. K.

86. Past max. 1885, May 11. K.

87a. Max. 1885, about end of March. D.

91a. Max. 1885, September. D.

117. Max. 1884, November 23. G.

121. Min. 1885, June 16; magn. 11.0. Star called T *Aquilæ* by Baxendell. K.

125. Max. 1885, May 16; magn. 7.65. K. Max. 1885, middle of July. En.

128. Max. 1885, Aug. 17; magn. 10.3. Star called S *Delphini* by Baxendell. K.

132. Max. 1885, July 20; magn. 8.2. K.

132b. Max. 1885, April 2; magn. 6.3. Min. 1885, September 15; magn. 9.6. K.

135. Near max. 1885, May 11. G.

TABLE II.—ADDITIONAL STARS.

No.	R. A. 1875.		Dec. 1875.	Observations, 1885.	Rem.
	h.	m.	° ' "		
1	0	6.8	+14 30	3 B.	
3		15.4	—20 45	3 M.	
—		35.9	+40 37	13 D. 27 Ee. — Hg. 17 Hn. 47 P.	A.
9		37.8	+ 6 37	6 P.	
21	1	6.2	+80 53	3 M.	
23		7.7	+34 57	3 M.	
25		15.0	+ 9 2	5 P.	
31		19.5	— 4 37	3 M.	
37		25.7	— 7 22	3 M.	
—		28.2	+11 55	5 G.	B.
43		33.5	—29 40	3 M.	
45		39.1	+ 7 56	3 M.	
47		47.7	+ 8 10	4 B. 3 M.	
57	2	0.8	— 9 11	3 M.	
59		10.4	+58 22	3 M.	
61		15.2	+54 47	3 M.	
63		19.0	+ 9 56	3 M.	
—		28.2	—13 38	8 Sr.	C.
—		49.3	+58 14	42,35,45 Sk.	D.
73	3	37.6	+ 9 0	4 P.	
77		41.8	— 0 17	1 M.	
81		46.5	+ 7 24	3 G. 5 M.	E.
85		49.5	+39 39	3 M.	
87		57.8	+23 38	5 P.	
91	4	10.5	—10 24	3 M.	
93		14.6	+19 31	3 K. 5,5,3 Sk.	
117	5	1.4	— 8 49	1 M.	
123		5.3	+ 0 22	1 M.	
129		6.6	— 0 15	1 M.	
145		28.3	+10 10	15 G.	F.
151		29.3	— 3 20	1 M.	
—		48.4	+20 9	3 D. 7 G. 6 P. 5 Sr.	G.
—	7	16.2	+23 47	26,—0 Sk.	H.
205	8	2.4	+19 48	5 P.	
—		49.1	+12 7	— K.	I.
—		51.5	+11 18	— K.	J.
229	9	20.1	+14 50	3 M.	
243		30.4	+15 48	2 M.	
293	10	45.5	—20 35	4 M.	
303	11	10.0	— 3 22	5 M.	
311	12	7.5	+ 0 17	3 M.	
315		10.7	+80 49	2 M.	
327		24.0	+ 5 6	3 M.	
331		26.9	—19 56	1 M.	
337		32.7	+17 12	3 M.	
339		32.9	+17 11	1 M.	
348		44.6	+82 23	4 M.	
353	13	3.2	— 9 40	3 M.	
361		24.0	— 8 55	3 M.	
375		47.8	+11 41	4 M.	
381		56.4	— 1 47	7 M.	
—	14	15.4	— 1 25	9 B.	K.
—		24.7	+39 36	25 D.	L.
413		45.4	—11 49	6 M.	

TABLE II. — *Continued.*

No.	R. A. 1875.	Dec. 1875.	Observations, 1885.	Rem.
	h. m.	° '		
429	15 10.7	— 3 43	5 M.	
447	36.5	—10 31	3 M.	
459	16 1.2	—21 11	10 P.	
465	9.1	+11 50	3 M.	
471	22.4	—19 14	3 P.	
479	31.7	+72 32	4 M.	
483	44.7	— 5 58	5 M.	
491	53.2	— 4 2	3 M.	
503	17 37.6	—18 36	3 M.	
509	18 2.7	+28 44	18 B. 87 Hn. 15 Zr.	
—	20.5	+38 40	2,4,3 Sk.	M.
517	28.0	+36 54	5 M. 3,5,5 Sk.	N.
—	38.5	+36 50	3,4,8 Sk.	O.
—	39.1	+39 11	3,6,7 Sk.	P.
521	43.1	— 8 3	3 M. 6,5,12 Sk.	Q.
529	52.8	+14 12	2 M.	
535	57.7	— 5 52	— K. 2 M. 5,5,11 Sk.	R.
537	59.8	+56 63	3 M.	
543	19 19.0	—21 30	3 M.	
545	23.9	+ 2 39	3 M.	
549	27.1	+17 28	6 Ee. 3 M.	
555	35.3	+12 53	10 Ee. 3 G. 1 M.	S.
557	37.9	+35 55	3 M.	
561	39.1	+33 51	3 M.	
—	39.9	+34 7	2 M.	
—	50.3	+16 17	25 G. 16 Sr.	T.
567	20 7.1	—22 21	7 P.	
—	9.8	—21 42	20,12,20 Sk.	U.
573	19.7	+ 9 39	3 M.	
575	23.6	—12 39	3 G. 3 M.	
—	24.3	+39 34	18 En. — K.	V.
585	39.6	— 0 48	3 M.	
—	39.7	+17 38	14 G.	W.
589	42.6	+45 36	5 M. 37,24,14 Sk.	X.
591	44.5	+45 23	3 M. 37,24,14 Sk.	Y.
—	46.1	+27 47	7 G. 37 Sr.	Z.
595	59.6	+66 13	3 M.	
597	21 0.1	+67 41	3 M.	
601	1.4	—21 51	7 P.	
603	7.9	+67 59	2 M.	
607	12.2	+66 6	3 M.	
—	31.3	+44 49	54 G. 55 Sr.	AA.
—	38.2	+37 27	0,0,14 Sk.	
613	45.2	+ 6 4	3 M.	
615	56.5	—17 14	9 P.	
—	22 29.3	— 8 15	— K.	BB.
—	31.6	+57 47	8 En.	CC.
635	23 14.8	+55 26	3 M.	
645	33.3	— 1 26	6 M.	
—	39.9	+ 2 47	1 G.	DD.
653	54.9	+59 40	1 M.	

REMARKS.

- A. New star in the nebula of Andromeda, announced by Hartwig.
- B. This star is 100 *Piscium*. Variation discovered by Borely. Near a maximum, 1885, November 30. G.
- C. Discovered by Sawyer in 1884. Period not determined.
- D. DM. $+58^{\circ}$ 539.
- E. Discovered by Gore in 1885.
- F. The observations show a variation of about half a magnitude. The star has been called T *Orionis*. G.
- G. Discovered by Gore in 1885. Magn. 6.15, December 13, 1885. G.
- H. DM. $+23^{\circ}$ 1699. Sk.
- I. 60 *Canceri*. K.
- J. DM. $+11^{\circ}$ 1954. Variation suspected by Baxendell. K.
- K. 103 *Virginis*. B.
- L. This star has been called V *Bootis*. Max. 1885, June 1; magn. 7.2. Min. 1885, January 28, October 23; magn. 9.4. Computed max. 1884, September 3, $+266.5$ E. Computed min. 1885, January 29, $+266.5$ E. D.
- M. Birmingham 442. Sk.
- N. Birmingham 448. Sk.
- O. Birmingham 458. Sk.
- P. Birmingham 459. Sk.
- Q. Birmingham 464. Sk.
- R. Birmingham 483. Sk.
- S. About magn. 8, 1885, August 19, September 9, November 4. G.
- T. Discovered by Gore, 1885. Confirmed by Espin and Sawyer. Variation from about magn. 5.6 to 6.4. Period short, about $8\frac{1}{2}$ days (G.), 8 days (Sr.).
- U. Birmingham 545. Sk.
- V. DM. $+39^{\circ}$ 4208. Found 1885, July 9, as a splendid red star, magn. 7.9, since varying to 9.2; no period found; diminishing irregularly. En. Below magn. 8, 1885, August 13, September 7, September 9.
- W. Birmingham 569. Discovered by Espin and confirmed by Gore. Period perhaps $111\pm$ days. G.
- X. DM. $+45^{\circ}$ 3271. Sk.
- Y. DM. $+45^{\circ}$ 3289. Sk.
- Z. Discovered by Sawyer, 1885, and confirmed by Gore. Period 4.437 days. Sr.
- AA. Birmingham 587. Discovered by Gore, 1885, and confirmed by Sawyer. Near max. 1885, January 1, August 19; near min. 1885, June 9. G. Period $120\pm$ days. Sr.
- BB. Variation suspected by Hind. K.
- CC. DM. $+57^{\circ}$ 2568. Fine orange red. Observed variation from magn. 7.0 to 8.0. Period probably short. En.
- DD. 19 *Piscium*. Magn. 5.5, October 3, 1885. G.

Professor Safarik also reports the following numbers of observations of suspected variable stars, which are given in the same form as in the tabular statements: star in *Auriga*, 0,0,1; in *Canis Major*, 0,0,2; in

Capricornus, 0,0,13; in *Monoceros*, 0,3,3; two in *Ophiuchus*, 0,14,9; in *Perseus*, 0,0,8; in *Virgo*, 0,0,9.

He has made observations of the minor planets as follows: Ceres (1), 6,19,28; Pallas (2), 0,0,24; Juno (3), 4,23,12; Vesta (4), 0,0,4; and observed the periodical comet Pons three times in December, 1883, and eight times in January, 1884.

The observations of asteroids just mentioned deserve attention, and it is to be hoped that other observers will adopt the practice of observing such objects, and of including them in their statements with regard to variable stars. The instance of Iapetus shows that the variations of a body shining by reflected light may become an interesting object of study, and may instruct us with regard to its period of rotation. Again, supposing it to be proved, either that a certain asteroid varies only in accordance with its distance from the Sun and from the observer, or that its other variations have a sufficiently definite character to allow them to be computed, it would form a valuable instrument of comparison between widely separated stars. It is probable that stellar magnitudes, as estimated, or even as measured by many kinds of photometric apparatus, are subject to systematic errors dependent upon the relative frequency of stars in different parts of the sky. These errors might be detected and eliminated by the comparison of asteroids with the stars differing but little from them in brightness, among which they were apparently moving at different times.